UK Research and Innovation

Sustainable manufacturing

Opportunity status:	Open
Funders:	**Engineering and Physical Sciences Research Council (EPSRC)**
Funding type:	Grant
Total fund:	£10,000,000
Publication date:	25 February 2021
Opening date:	25 February 2021
Closing date:	20 April 2021 16:00 UK time

Last updated: 26 February 2021

Start application ▶

Apply for funding to research technologies and processes for sustainable manufacturing. This should focus within EPSRC's remit.

Your proposal must address at least one of the following:

- resource efficiency and multi-level optimisation
- design and manufacturing for a more circular economy
- more efficient recycling and recovery of products and materials.

You must be a UK resident based at an eligible research organisation. You can be at any career stage.

Your project can last up to three years. We'll fund 80% of its full economic cost.

Between six and 10 awards are available.

Open all

Who can apply

Applications are welcome from investigators at all career stages. The principal investigators and co-investigators are expected to meet the standard EPSRC eligibility criteria.

Standard EPSRC eligibility rules apply.

Research grants are open to UK higher education institutions, research council institutes, UKRI-approved independent research organisations and NHS bodies with research capacity.

Read the **guidance on institutional eligibility**.

You can apply if you are resident in the UK and meet at least one of the bullets below:

- are employed at the submitting research organisation at lecturer level or equivalent
- hold a fixed-term contract that extends beyond the duration of the proposed project, and the host research organisation is prepared to give you all the support normal for a permanent employee
- hold an EPSRC, Royal Society or Royal Academy of Engineering fellowship aimed at later career stages
- hold fellowships under other schemes (please contact EPSRC to check eligibility, which is considered on a case-by-case basis).

Holders of postdoctoral level fellowships are not eligible to apply for an EPSRC grant.

If you are currently restricted under the repeatedly unsuccessful applicants policy, you may submit unlimited outlines. You will only be able to submit one full proposal (as principal investigator or co-investigator) during the 12 month restricted period.

Find out more about the **repeatedly unsuccessful applicants policy (EPSRC website)**.

What we're looking for

Synopsis

The vision of the EPSRC Manufacturing the Future (MtF) theme is of a prosperous and productive UK, supported by a thriving research and knowledge-led manufacturing base.

To enable this, our mission is to create and capture the benefits of basic research for UK manufacturing industries.

One of the theme's priorities is sustainability and function: research to enhance understanding of how manufacturing processes, and systems or products, could be

designed and manufactured to deliver desired functionality, multi-level optimisation and recoverability.

The goal is to increase sustainability in manufacturing, whether via less resource use, less energy consumption, lower carbon emissions, or less waste.

The priority also covers the development and use of tools, theories and methods for analysing or assessing sustainability in relation to manufacturing.

To deliver this priority, the aims of this sustainable manufacturing funding opportunity are to:

- reduce manufacturing resource use to just the amount required, decreasing reliance on raw materials (especially rare ones)
- encourage the re-use and integration of products and co-products from other processes in manufacturing systems
- design products for greater efficiency throughout their lifecycle, including design for disassembly, repair, recycling or upcycling
- improve recyclability of products, and recoverability or recovery efficiency of high-value resources, including by reducing product material complexity
- reduce the environmental impact of manufacturing processes, and the impact of products to the environment throughout their lifecycle and at their end of life.

This call will fund a portfolio of novel research that addresses one or more of the above, whilst building new capabilities and processes.

Find out more about **EPSRC's portfolio and strategies (EPSRC website)**.

These are broad aims, and the research scope of this call does not encompass all research that contributes to these aims. Rather, we will fund fundamental engineering and physical sciences research into manufacturing technologies and processes which fits the aims of this call.

Scope

Proposals should target any current or future manufacturing system that can deliver product function with maximum material recovery.

The focus of the research should be on technologies and processes which would support sustainable manufacturing, or on the design or operation of such manufacturing technologies or processes.

In either case, it must be clear how the research to be conducted supports the vision of sustainable manufacturing.

Proposals must address at least one of these three key manufacturing research challenges:

- resource efficiency and multi-level optimisation, to reduce manufacturing resource use to just the amount required
- design and manufacturing for a more circular economy including re-use, repair, disassembly and remanufacture

- more efficient recycling and recovery of products and materials, to retain value in the manufacturing system.

Applicants must indicate in their cover letter which of these challenges they consider their proposal to be addressing.

Proposals must lie within the remit (minimum 50%) of the EPSRC MtF theme.

To fit within this remit, proposals must focus on fundamental engineering and physical sciences research into the manufacturing technologies, the manufacturing process or its design and operation.

Proposals deemed by EPSRC to lie outside this remit or the scope of the call may be rejected without reference to peer review. This applies to both outline and full proposals.

A number of broader economic, social and environmental challenges may also arise when considering the development of sustainable manufacturing processes.

Proposals that focus primarily on addressing these challenges will fall outside the remit of the EPSRC MtF theme and therefore the scope of the call.

However, applicants are encouraged to consider any broader, multidisciplinary challenges relevant to their project and to demonstrate in their application that their research vision supports these considerations.

Applicants are encouraged to think about industrial engagement, including building in plans to engage with a range of relevant manufacturing companies, including small and medium-sized enterprises, throughout the project.

Applicants who are invited to submit a full proposal will be required to include a user engagement strategy as part of the full proposal paperwork.

Funding available

Funding is available for projects up to 36 months in duration.

Grant size is expected to be in line with usual standard research grants, and must be within 10% of the total amount indicated at the outline stage.

Applicants intending to request a particularly large grant (greater than £2 million) are strongly advised to contact EPSRC in advance of submission to discuss this.

Equipment over £10,000 in value (including VAT) is not available through this call. Smaller items of equipment (individually under £10,000) should be in the 'directly incurred – other costs' heading.

Find out more about **equipment funding (EPSRC website)**.

How to apply

Applicants should ensure they are aware of and comply with any internal institutional deadlines that may be in place.

You should prepare and submit your proposal using the research councils' **Joint Electronic Submission (Je-S) system**.

When adding a new proposal, you should go to documents, select 'new document', then select:

- council: EPSRC
- document type: outline proposal
- scheme: outline

And, on the project details page, you should select the 'sustainable manufacturing' call.

After completing the application:

- you must 'submit document' which will send your application to your host organisation's administration
- your host organisation's administration is required to complete the submission process – applicants should allow sufficient time for your organisation's submission process between submitting your proposal to them and the call closing date.

EPSRC must receive your application by 16:00 on 20 April 2021.

As well as the Je-S application form, the following documents must be submitted.

Documents for outline stage

Case for support (outline stage)

Mandatory, four pages maximum

The four page case for support should include the following information (please structure it using the headings given):

Heading one: research vision

What is your vision of the sustainable manufacturing addressed by your project, and how does your proposed research contribute to this vision?

Heading two: research challenge

Identify the overall aims of the programme and the challenges to be addressed.

Explain why the proposed research is novel, timely and innovative.

Explain how the proposed research fits the call.

Heading three: project team

Briefly explain who will be involved in the grant and what expertise they will contribute.

Heading four: proposed programme

Describe the programme of research that will be carried out through the grant, showing how the work packages relate to each other. A small diagram may be useful at this point.

Outline the methodology to be used in the research and justify this choice.

Proposal cover letter (outline stage)

Mandatory, no page limit

Applicants must indicate in their cover letter which of the three challenges of this call they consider their proposal is addressing.

The cover letter can also be used to highlight any important information to EPSRC. This attachment type is not seen by reviewers or panel members.

Documents for full proposals stage

Workplan

Mandatory, one page

Should be illustrated with a simple diagrammatic work plan, such as a programme evaluation and review technique (PERT) or gantt chart.

Case for support (full proposal stage)

Mandatory, eight pages maximum

Comprising up to two A4 sides for a track record, and six A4 sides describing proposed research and its context.

Justification for resources

Mandatory, two pages maximum

CVs

For named and visiting researchers, and researcher co-investigators only.

Two pages maximum for each CV.

Project partner letters of support

Must be included from all named project partners. Must be on headed paper, and be signed and dated within six months of the proposal submission date.

No page limit.

Letters of support

In exceptional circumstances a maximum of three letters can be submitted.

No page limit.

Equipment quotes

For equipment above £25,000.

No page limit.

Equipment business case

Required for any items or combined assets with a value above £138,000.

Two pages maximum for each business case.

Technical assessment

No page limit.

Host organisation letter of support

Two pages maximum.

User engagement strategy (type: additional document)

Mandatory, two pages maximum

Successful applicants will be required to develop and execute a strategy for engaging with potential users of the research funded in the project (resources for this activity can be requested but must be justified in the application).

An initial version of this strategy should be submitted as a two-page document as part of the full proposal stage.

This strategy should be reviewed and updated regularly as part of the formal management of the grant.

The strategy should cover:

- how and when potential users have been or will be identified
- what form the engagement will take
- what steps will be taken to ensure that outputs of the research are made available to potential users.

Suitable metrics for determining the success of the strategy in delivering value to users.

This requirement has been included in this call to reflect the importance of engaging with manufacturing industries as part of realising the benefits of the fundamental research the MtF theme support.

Documents additional guidance

You should attach your documents as PDFs to avoid errors. They must be completed in single-spaced Arial 11 font or similar-sized sans serif typeface.

Your outline proposal should consist only of the application form, a four page case for support, and a cover letter. Other documents such as annexes, a work plan or letters of support will not be accepted at outline stage.

Costs on the outline stage application form should be recorded as accurately as possible within reason. We do not expect any quotations at this stage, but the overall cost of applications submitted in the full proposals stage should be within 10% of the cost proposed at outline stage.

At the outline stage, proposals will be assessed against their fit to the scope of the call. Therefore, you should be sure to justify how your project would contribute to increased sustainability of manufacturing technologies or processes.

We strongly advise applicants to refer to the assessment criteria when writing a proposal.

EPSRC will not fund a project if it believes that there are ethical concerns that have been overlooked or not appropriately accounted for. All relevant parts of the ethical information section must be completed.

Find out more about **guidance on completing the Je-S form**.

EPSRC guidance can be found under additional information.

How we will assess your application

Assessment process

In the event of this call being substantially oversubscribed as to be unmanageable, EPSRC reserve the right to modify the assessment process.

This is a two-stage assessment process.

Stage one: outline proposals

The outline stage is being used to manage demand at the full proposal stage and to ensure that projects are a good fit to the scope of the call. There will be no postal peer review of outline proposals.

Outline proposals will be considered by an independent expert panel. Assessment of proposals will be based on how well the information provided in the case for support aligns to the criteria identified in the assessment criteria section.

Successful outline proposals will be invited to submit a full proposal.

Any proposals not within the scope of this call or not primarily within the remit of the EPSRC Manufacturing the Future theme will be rejected prior to the outline panel meeting.

The outline panel will take place in the week commencing 24 May 2021 and successful applicants will be invited for full proposals within a week of the panel

date.

Stage two: invited full proposals

Applicants who are successful at stage one will be invited to submit a full proposal by email and will be provided with details of how to submit a full proposal. This will be in a separate call document and not as a part of this.

Proposals will be assessed through postal peer review. Reviewers will be assessing applications against the full proposal assessment criteria provided in the assessment criteria section.

Applications that receive sufficient support from reviewers will be taken to a prioritisation panel. The panel will assess proposals against the full proposals assessment criteria and produce a rank ordered list.

The prioritisation panel will take place in November 2021. Funding decisions will be based on the rank-ordered list compiled by the panel and we expect to communicate these in December 2021.

Outline assessment criteria

Criteria to be assessed at the outline stage are:

- suitability of the research vision and research challenge

  - fit to call scope of the applicants' vision as described
  - extent of the research contribution to the vision of sustainable manufacturing, either existing or future
  - appropriateness of the consideration of broader issues and challenges relating to the research and its impact

- appropriateness of the proposed team and programme of research to deliver innovative, high-quality research

  - this particularly includes potential for transformative aspects or significant potential outcomes.

Full proposals assessment criteria

Full proposals will be assessed against the following criteria.

Standard criteria

Research quality (primary), making reference to:

- the novelty, relationship to the context, timeliness and relevance to identified stakeholders
- the ambition, adventure, transformative aspects or potential outcomes
- the suitability of the proposed methodology and the appropriateness of the approach to achieving impact. (For multi-disciplinary proposals please state which aspects of the proposal you feel qualified to assess).

National importance (secondary major) how the research:

- contributes to, or helps maintain the health of other disciplines
- contributes to addressing key UK societal challenges or contributes to future UK economic success and development of emerging industry(s)
- meets national needs by establishing or maintaining a unique world leading activity
- complements other UK research funded in the area, including any relationship to the EPSRC portfolio.

Applicant and partnerships (secondary), the ability to deliver the proposed project, making reference to:

- appropriateness of the track record of the applicant(s)
- balance of skills of the project team, including collaborators.

Resources and management (secondary), the effectiveness of the proposed planning and management and whether the requested resources are appropriate and have been fully justified, making reference to:

- any equipment requested, or the viability of the arrangements described to access equipment needed for this project, and particularly on any university or third-party contribution
- any resources requested for activities to either increase impact, for public engagement or to support responsible innovation.

Call-specific criteria

Fit to call (secondary major criterion):

- alignment of research programme to aims and objectives of call.

Feedback

Brief feedback may be provided on outline proposals as directed by the panel.

Feedback will be provided in the form of reviewer comments on the full proposals plus information on the panel provided on Grants on the Web.

Nominating reviewers

As part of the application process you will be invited to nominate up to three potential reviewers who you feel have the expertise to assess your proposal. Please ensure that any nominations meet the **EPSRC policy on conflicts of interest (EPSRC website)**.

For more information about the reviewer selection process please see the related content links.

Guidance for reviewers

When completing your assessment please use the section marked 'call specific criteria' to address the 'fit to call' criterion as defined in the assessment criteria above.

Find out more about the **EPSRC peer review process and guidance for reviewers (EPSRC website)**.

Find out more about **guidance for reviewing standard grants (EPSRC website)**.

Contact details

Mr Tochukwu Ajare, Portfolio Manager, MtF theme
Email: **tochukwu.ajare@epsrc.ukri.org**

Mr Stephen Gilligan, Portfolio Support Manager, MtF theme
Email: **stephen.gilligan@epsrc.ukri.org**

MtF theme central email inbox: **manufacturingpeerreview@epsrc.ukri.org**

For help and advice on costings and writing your proposal please contact your research office in the first instance, allowing sufficient time for your organisation's submission process.

Any queries regarding the submission of proposals through Je-S should be directed to:

The Je-S helpdesk
Tel: 01793 444164
Email: **jeshelp@je-s.ukri.org**

Additional info

Background

The EPSRC MtF theme has recently refreshed its research priorities, with input from numerous members of the manufacturing research and innovation community.

The topic of 'sustainability and function' has emerged as one of the theme's new research priorities.

In 2018 MtF held a strategic retreat to explore the future manufacturing research and innovation landscape and examine future strategic opportunities.

The outputs were further developed through a series of community engagement activities, forming the basis of the MtF strategic priorities workshop.

This is where the suggestion of 'sustainable radical manufacturing technologies for resource efficiency' as a priority area for future manufacturing research was made.

This covers design and manufacture of products to deliver the desired functionality, recoverability and zero waste, manufacturing technologies and design for repair and disassembly for example recycling, upcycling and degradation.

Subsequent discussions with the MtF Strategic Advisory Team and input from the Early Career Forum in Manufacturing Research developed 'sustainable radical manufacturing technologies for resource efficiency' into 'sustainability and function'.

It was emphasised that a priority should be placed on advancing manufacturing research in this area.

As part of UKRI environmental sustainability strategy, with the ambition to "embed sustainability in everything we do and achieving 'net-zero' for our carbon emissions by 2040", this priority should be reflected in all strategic investments.

Therefore, a target towards net-zero should be embedded in all projects. The research projects should be compatible with, or help to achieve, manufacturing technologies, processes and systems that make effective and efficient use of resources, leading to acceptable (even positive) environmental impacts.

Find out more about the **Manufacturing Futures Retreat 2018 (EPSRC website)**.

Read the **workshop report on EPSRC MtF regional meetings 2018/19 (PDF, 12,474KB)**.

Read the **report on MtF research priorities workshop (PDF, 884KB)**.

Supporting documents

**Sustainable manufacturing equality impact assessment (PDF, 190KB)**

Find out more about:

- **resubmissions (EPSRC website)**
- **repeatedly unsuccessful applications (EPSRC website)**
- **equipment (EPSRC website)**
- **use of animals (EPSRC website)**
- **responsible research and innovation (EPSRC website)**
- **ethical considerations (EPSRC website)**
- **equality, diversity and inclusion (EPSRC website)**
- **reviewer selection (EPSRC website)**
- **conflicts of interest (EPSRC website)**
- **standard grants – Declaration on Research Assessment (EPSRC website)**.

Timeline

25 February 2021
Opening date

20 April 2021 16:00
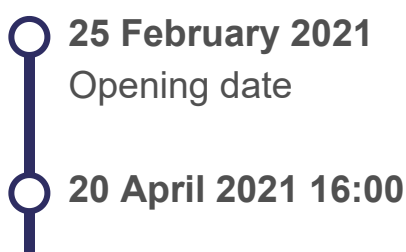
Closing date

25 May 2021
Panel review